

October 27, 1971

Dr. B. Warner North
Decision Analysis Group
Stanford Research Institute
200 East 42nd Street
New York, New York 10017

Dear Warner,

Thank you for sending me your Science manuscript. Although your letter was dated October 6th, it only just arrived.

I don't have many comments and hope you will simply get this into print as quickly as possible.

A few possible typos.

Page 1 - damages "\$40 million" or \$400 million?

Page 2 - coming within 50 miles

Page 4 and generally for your discussion of H_1 etc. - We have here a rather fundamental problem of scientific credibility. Your estimates of H_1 are based on conversations with Storm Fury Project people rather than much by way of an independent statistical analysis of the actual experimental data. Then, while you accept their subjectivity in general you then challenge it in the light of the Debbie results. But if their views are so faulty there, why trust them at all?

This problem will come to a head as you may see from the attached quotation from a piece by Battan - I think I may have sent you the manuscript of it some time ago. It would be unfortunate if the debate then hinged on who were the sources of informed scientific opinion! Now, I believe that Battan is making a policy as well as a scientific judgment, and if you feel ~~th~~is strongly and confidently enough yourself you might even quote his remarks to illustrate the problem. One way of doing this more gently would be to quote one of your anonymous correspondences who might "favor the performance of more experiments" but who would also advocate seeding a hurricane if it were in his hands in order to protect his own family.

Page 34 - "excessively large" - I would advocate that you keep your own value judgments out of the main body of the paper as completely as possible and save this type of comment for your discussion labeled as such. This would be consistent with your own analysis of the ~~adv~~isory process and with the "authentic discourse", a useful phrase in Monod's book

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"Chance and Necessity".

In your general discussion of government responsibility cost it might be useful to compute this as an annual tax on the population actually at risks

Page 40ff - would it influence the assessment of responsibility cost to include also the value of the information achieved by an operational seeding?

Page 41 top - I think this point deserves some clarification. Consider language like "seed operationally now," which would itself generate information, and other information derived by restricted experiments would have a comparably low value.

Page 46 - What is your criterion of a "successful field experiment"? What if the next trial is not "successful"? I may have missed it but I don't think you factor this contingency into evaluating the cost-benefit of the information, or rather the experiment designed to acquire the information.

Finally, I have to raise some questions, which go beyond the scope of this paper, about the model of political decision making under which both of us have been laboring. It would be interesting and important to get the reactions of a cynical political scientist to all this. Is your discussion on Page 52 a factual description or an ideal expectation?

The actual behavior of "decision makers" does not exactly follow the model. On Page 6 you say "the decision maker must select one or two alternatives". In practice he may do a great deal to evade the decision or shift the burden of responsibility to someone else or to leave the situation sufficiently confused that it is not clear who should be held responsible. There is a certain tautology here which might be discussed in terms of the semantics of "decision maker" but one could then ask the question whether that set is not an empty one in the real world. I can hardly object to the formulation that you present in your paper. It might be just as well to make the logical analysis of the situation more explicit by stating the model as one of your postulates rather than taking it for granted that it is universally understood and accepted. More concretely I would also say that it is usually not at all clear exactly who is the "decision maker". People often ask about such weighty questions; "Who shall decide?" We could still do a lot of empirical research on "who is deciding now?" We won't be lacking for things to do!

Sincerely yours,

Joshua Lederberg
Professor of Genetics

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Enclosure